**SECTION 6.3**

**TECHNICAL SPECIFICATION FOR**

**HEAVY VEHICULAR PAVING BRICK**

**NOVEMBER 2000**

**Part 1: General**

* 1. **Scope of Work**

### This section specifies the materials and general procedure for placement of heavy vehicular paving bricks on sand setting bed.

**Part 2: Quality Assurance**

* 1. **Reference Standards**

### Unless otherwise stated, the latest editions of the following documents are applicable

for this specification:

## ASTM C33 Standard Specification for Concrete Aggregates

## ASTM 43 ASTM C43-02 Standard Terminology of Structural Clay Products

## ASTM 67 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile

## ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

## ASTM C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

## ASTM 144 Standard Specification for Aggregate for Masonry Mortar

## ASTM C410 Standard Specification for Industrial Floor Brick

## ASTM C418 Standard Test Method for Abrasion Resistance of Concrete by Sandblasting

## ASTM C902 Standard Specification for Pedestrian and Light Traffic Paving Brick

## ASTM C1272 Standard Specification for Heavy Vehicular Paving Brick

#### ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft.- lbf/ft3 (600 kN-m/m3)). Using a 5.5-lb. (2.49 kg), Rammer and 12 in. (305 mm) drop.

## ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester

**2.2 Qualification Requirements**

### Manufacturer shall be specialized in the manufacturing of heavy vehicular paving brick for a minimum of three (3) years.

### Installation shall be by a Contractor and crew with at least three (3) years of experience in placing heavy vehicular paving brick on projects of similar nature.

* Installation Contractor shall conform to all local, state/provincial licensing and bonding requirements.

**2.3 Sampling and Testing**

* The expense of inspection and testing shall be borne by the Contractor.
* Manufacturer shall provide access to lots ready for delivery to the Owner or his authorized representative for testing or sampling of material prior to commencement of paving brick placement.
* Manufacturer shall provide a minimum of three (3) years testing backup data showing manufactured products that meet manufacturer’s specifications when tested in compliance with ASTM C 1272.
* Sampling shall be random with a minimum of nine (9) specimens per 20,000 sq. ft. per product shape and size with repeated samples taken every additional 20,000 sq. ft. or a fraction thereof.

**2.4 Rejection**

* In the eventshipment fails to conform to the specified requirements, the manufacturer may sort it, and new test units shall be selected at random by the Owner’s representative from the retained lot and tested at the expense of the Contractor. If the second set of test fails to conform to the specified requirements, the entire lot shall be rejected.

**2.5 Submittals**

The Contractor shall furnish following documents:

* + 1. Material Data:
			- Product drawing and data showing characteristics of bricks, dimensions, and special shapes
* Full size samples of each brick color, illustrating style, size, color, and surface texture of units being provided
* Sieve analysis for grading of bedding and joint sand.
	+ 1. Testing Documentations:
			- Test results from an independent testing laboratory for compliance of bricks requirements to manufacturer’s specifications.
			- All additional sampling and testing data

**2.6 Warranty**

All work performed or repaired under this Contract will be warranted to be free from detects in material and workmanship for a period of one year from the date of acceptance. If Owner determines that the process has failed during the warranty period, the Contractor will perform any and all repairs at no additional cost to the owner.

**Part 3: Product**

**3.1 Heavy Vehicular Paving Bricks**

Unless otherwise specified, the paving bricks shall meet the following requirements:

* Paving bricks shall be manufactured by Acme Brick Company, or approved equal.
* Red paving bricks shall be Tulsa Blend 2 Garnet Modular Solid, or approved equal.
* Dark paving bricks shall be Tulsa Blend 20 Amaretto Modular Solid, or approved equal.
* Paving brick shall meet the requirements of ASTM C 1272, Standard Specification for Heavy Vehicular Paving Bricks, Type F.
* Paving brick will have the following dimensions: 7-5/8 inches (long), 3-5/8 inches (wide), and 2-5/8 inches (thick).
* All paving bricks shall be sound and free of defects that would interfere with the proper placing of brick or impair the strength or permanence of the construction.
* Minor cracks incidental to the usual methods of manufacture, or chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.
	1. **Sand**

Bedding and joint sand shall be clean, non-plastic, free from deleterious or foreign matter. The sand shall be natural or manufactured from crushed rock. Limestone screening or stone dust shall not be used. When paving bricks are subject to vehicular traffic, the sands shall be as hard as practically available.

3.2.1 Bedding Sand

* The type of sand used for bedding is often sand that is suitable for the manufacturing of concrete. Contractor shall confirm that the selected sand(s) have been successfully used in previous similar applications. Limestone sand should not be used for bedding sand. Mason sands are typically acceptable only for joint sand, provided they meet grading requirements as shown in Table 2 of this section.
* Grading of sand samples for the bedding course and joints shall be done according to ASTM C 136. The bedding sand shall conform to the grading requirements of ASTM C33 as shown in **Table 1**.

 **Table 1**

Grading Requirements for Bedding Sand\_\_\_

 ASTM C33 \_\_\_\_\_\_

Sieve Size Percent Passing\_\_\_\_\_

3/8in. (9.5 mm) 100

No. 4 (4.75 mm) 95 to 100

No. 8 (2.36 mm) 85 to 100

No. 16 (1.18 mm) 50 to 85

No. 30 (600 um) 25 to 60

No. 50 (300 um) 10 to 30

No. 100 (150 um) 2 to 10

3.2.2 Joint Sand

* Bedding sand may be used for joint sand. However, extra effort in sweeping and compacting the paving bricks may be required in order to completely fill the joints. If joint sand other than bedding sand is used, the gradations shown in Table 2 are recommended. Joint sand should not be used for bedding sand.
* The joint sand shall conform to the grading requirements of ASTM C 144 as shown in **Table 2** below.

 **Table 2**

 Grading for Joint Sand

 ASTM C 144

Sieve Size Natural Sand

 Percent Passing

No. 4 (4.75 mm) 100

No. 8 (2.36 mm) 95 to 100

No. 16 (1.18 mm) 70 to 100

No. 30 (600 um) 40 to 75

No. 50 (300 um) 10 to 35

No. 100 (150 um) 2 to 15

No. 200 (75 um) 0

* + 1. Sealer/Joint Sand Stabilizer

The sealer / joint sand stabilizer shall meet brick paver manufacturer’s requirements.

# Part 4: Execution

**4.1 Delivery, Storage and Handling**

* Deliver paving brick to the site in steel banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift. Unload paving brick at job site in such a manner that no damage occurs to the product.
* Sand shall be covered with waterproof covering to prevent exposure to rainfall or removal by wind. The covering shall be secured in place.
* Coordinate delivery and paving schedule to minimize interference with normal use of buildings, walks and pavements adjacent to brick paving.

**4.2 Preparation of Base**

For installations on a concrete base, the contractor should be aware that the top surface of the pavers may be 1/8 to ¼ in. (3 to 6mm) above the final elevations after compaction. This difference in initial and final elevations is to compensate for possible minor settling.

* Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.
* Verify that base is dry, uniform, even and ready to support sand, pavers, and imposed loads.

The sand shall be spread evenly over the 8 inch thick reinforced concrete base and screed to a nominal 1 in. (25 mm) thickness, not exceeding 1 ½ in. (40 mm) thickness. The screed sand should not be distributed. Sufficient sand shall be placed to stay ahead of the laid paving brick. Bedding sand shall not be used to fill depressions in the concrete base surface.

* 1. **Paving Brick Installation on Prepared Setting Bed**
* Ensure that paving bricks are free of foreign materials before installation.
* Lay the paving bricks in the pattern(s) as shown on the drawings or match the patterns of existing adjacent bricks.
* Joint between the paving bricks on average shall be between 1/16 in. and 3/16 in. wide.
* Fill gaps at the edge of the paved area with saw cut brick pavers. Unit cuts no smaller than one-third of a whole paving brick are recommended along edges subject to vehicular traffic.
* Cut paving bricks to be placed along the edge with a mounted motor driven masonry saw.
* Use a vibrator to vibrate the paving bricks into the sand. Vibrator shall meet brick paver manufacturer’s requirements.
* Vibrate the paving bricks, sweeping dry joint sand into the joints and vibrating until they are full. This will require at least two or three passes with the vibrator. Do not vibrate within 4 ft. of the unrestrained edges of the brick pavers.
* All work to within 4 ft. of the laying face must be left fully compacted with sand-filled joints at the completion of each day.
* After initial vibration, washed joint sand shall be spread over the paving brick surface, allowed to dry, and vibrated into the joints with additional vibrator passes.
* Sweep off excess sand so that the sand level is 1/16th of an inch below the surface.
* The final surface elevations shall not deviate more than ¼ inch under a 10-foot long straight edge.
* The surface elevations of paving bricks shall be 1/8 inch to ¼ inch above adjacent drain inlets, concrete collars or channels.
* The resanding of paver joints shall be performed by the contractor for a period of ninety (90) days after completion of work as necessary.
	1. **Field Quality Control**
* After removal of excess sand, check final elevations for conformance to drawings.
	1. **Application of Sealer/Joint Sand**
* The joint sand shall be 1/16th of an inch below the paving brick surface and shall be dry for its full depth and free any contamination.
* The surface shall be clean and free of any oil, laitance, dust and any loose material.
* The sealer/joint sand stabilizer shall be applied evenly per manufacturer’s requirements.

# Part 5: Method of Measurement and Payment

Method of Measurement and Payment for the work included in this section will be in accordance with the payment schedule in the Bid Proposal.

**\*\*END OF SECTION\*\***